

CLAIMS

What is claimed is:

1. A method for sending a composite image from a host computer to a display computer, the display computer having an off-screen memory with available memory, the method comprising:  
breaking said composite image into one or more sub-images, wherein each of said sub-images can fit into the available memory of the off-screen memory; and  
transmitting each of said sub-images to said display computer for storage in the off-screen memory.
2. The method of claim 1, wherein each of said sub-images is a rectangle.
3. The method of claim 1, wherein said transmitting includes, for each of said sub-images:  
sending one or more messages to said display computer indicating that a sub-image of a composite image is being transmitted, said one or more messages containing data sufficient to reconstitute said sub-image on-screen.
4. The method of claim 3, wherein said sending one or more messages includes:  
sending one or more messages to said display computer indicating a sub-image of a composite image is about to be transmitted.
5. The method of claim 3, wherein said sending one or more messages includes:

sending one or more messages to said display computer indicating a width and height of said sub-image.

6. The method of claim 3, wherein said sending one or more messages to said display computer includes:

sending one or more messages to said display computer indicating the transmission of said sub-image of a composite image has been completed.

7. The method of claim 3, wherein said sending one or more messages includes:

sending one or more messages to said display computer indicating the position on the screen to which the sub-image of the composite image is to be displayed.

8. The method of claim 1, further comprising:

determining the amount of memory available in the off-screen memory.

9. The method of claim 8, wherein said determining includes receiving an indicator of the amount of memory available in the off-screen memory during or after initialization of the connection between the display computer and host computer.

10. The method of claim 9, wherein said determining further includes receiving any stride requirements from the display computer during or after initialization of the connection between the display computer and host computer.

11. The method of claim 1, wherein said breaking includes:

breaking said composite image into one or more sub-images, wherein said sub-images are chosen so as to maximize the number of sub-images that are equal in size to said available memory in the off-screen memory.

12. The method of claim 1, wherein said breaking includes:

breaking said composite image into one or more sub-images, wherein said sub-images are chosen so as to maximize the number of sub-images that are equal in size to some fixed width and height.

13. The method of claim 1, wherein said breaking and transmitting are performed when a copy area command from a composite image in a pixmap to a realized window is recorded.

14. A method for handling a composite image sent from a host computer to a display computer, the display computer having an on-screen display and an off-screen memory with available memory, the method comprising:

receiving one or more sub-images of the composite image from the host computer;  
storing said one or more sub-images in an off-screen memory; and  
transferring each of said sub-images in said off-screen memory to the on-screen display.

15. The method of claim 14, wherein each of said sub-images is a rectangle.

16. The method of claim 14, wherein said receiving includes, for each of said sub-images:

receiving one or more messages from the host computer indicating a sub-image of a composite image is being transmitted, wherein said one or more messages comprise data sufficient to reconstitute said sub-image on-screen.

17. The method of claim 16, wherein said receiving one or more messages includes:

receiving one or more messages from the host computer indicating a sub-image of a composite image is about to be transmitted.

18. The method of claim 16, wherein said receiving one or more messages includes:

receiving one or more messages from a host computer indicating a width and height of said sub-image.

19. The method of claim 16, wherein said receiving one or more messages includes:

receiving one or more messages from the host computer indicating the transmission of said sub-image has been completed.

20. The method of claim 16, wherein said receiving one or more messages includes:

receiving one or more messages from said host computer indicating the position on the screen to which the sub-image of the composite image is to be displayed.

21. The method of claim 14, further comprising sending an indicator of the amount of memory available in the off-screen memory to the host computer during or after initialization of the connection between the display computer and the host computer.

22. The method of claim 21, wherein said sending an indicator further comprises sending an indicator of any stride requirements to the host computer during or after initialization of the connection between the display computer and the host computer.

23. A method for handling a composite image sent from a host computer to a display computer, the display computer having a buffer and an on-screen display, the method comprising:

receiving one or more protocol commands used to draw the composite image;

storing said one or more protocol commands in the buffer; and

drawing the composite image on the on-screen display by executing said one or more protocol commands in the buffer.

24. The method of claim 23, further comprising:

receiving one or more messages from the host computer indicating that the composite image is about to be transmitted.

25. The method of claim 23, further comprising:

receiving one or more messages from the host computer indicating that the transmission of the composite image has been completed.

26. An apparatus for sending a composite image from a host computer to a display computer, the display computer having an off-screen memory with available memory, the apparatus comprising:

a composite image sub-image divider; and

a sub-image transmitter coupled to said composite image sub-image divider.

27. The apparatus of claim 26, wherein said sub-image transmitter comprises a sub-image one or more message sender.

28. The apparatus of claim 27, wherein said sub-image one or more message sender includes an impending sub-image transmission message sender.

29. The apparatus of claim 27, wherein said sub-image one or more message sender includes a sub-image width and height message sender.

30. The apparatus of claim 27, wherein said sub-image one or more message sender includes a sub-image transmission completed message sender.

31. The apparatus of claim 27, wherein said sub-image one or more message sender includes a sub-image screen position message sender.

32. The apparatus of claim 27, wherein said sub-image one or more message sender includes a sub-image sender.

33. The apparatus of claim 26, further comprising an amount of available off-screen memory determiner coupled to said composite image sub-image divider.

34. The apparatus of claim 26, wherein said composite image sub-image divider includes a maximum number of sub-images equal in size to available memory sub-image divider.

35. The apparatus of claim 26, wherein said composite image sub-image divider includes a fixed, equal size sub-image divider.

36. An apparatus for handling a composite image sent from a host computer to a display computer, the display computer having an on-screen display and an off-screen memory with available memory, the apparatus comprising:

a sub-image receiver;

a sub-image off-screen memory storer coupled to said one or more sub-image receiver;

and

a sub-image off-screen memory-to-on-screen display transferrer coupled to said sub-image off-screen memory storer.

37. The apparatus of claim 36, wherein said sub-image receiver comprises a sub-image one or more message receiver.

38. The apparatus of claim 36, wherein said sub-image one or more message receiver includes an impending sub-image transmission message receiver.

39. The apparatus of claim 36, wherein said sub-image one or more message receiver includes a sub-image width and height message receiver.

40. The apparatus of claim 36, wherein said sub-image one or more message receiver includes a sub-image transmission completed message receiver.

41. The apparatus of claim 36, wherein said sub-image one or more message receiver includes a sub-image screen position message receiver.

42. The apparatus of claim 36, further comprising an available off-screen memory size sender coupled to said sub-image receiver.

43. The apparatus of claim 36, further comprising a stride requirement sender coupled to said off-screen memory size sender.

44. An apparatus for handling a composite image sent from a host computer to a display computer, the apparatus comprising:

a buffer;

a display;

a protocol command receiver;



a protocol command buffer storer coupled to said protocol command receiver and to said buffer; and

a composite image on-screen display executer coupled to said buffer and said display.

45. The apparatus of claim 44, further comprising an impending composite image transmission message receiver coupled to said protocol command receiver.

46. The apparatus of claim 44, further comprising a composite image transmission completed message receiver coupled to said protocol command receiver.

47. An apparatus for sending a composite image from a host computer to a display computer, the display computer having an off-screen memory with available memory, the apparatus comprising:

means for breaking said composite image into one or more sub-images, wherein each of said sub-images can fit into the available memory of the off-screen memory; and

means for transmitting each of said sub-images to said display computer for storage in the off-screen memory.

48. The apparatus of claim 47, wherein each of said sub-images is a rectangle.

49. The apparatus of claim 47, wherein said means for transmitting includes, for each of said sub-images:

means for sending one or more messages to said display computer indicating that a sub-image of a composite image is being transmitted, said one or more messages containing data sufficient to reconstitute said sub-image on-screen.

50. The apparatus of claim 49, wherein said means for sending one or more messages includes:

means for sending one or more messages to said display computer indicating a sub-image of a composite image is about to be transmitted.

51. The apparatus of claim 48, wherein said means for sending one or more messages includes:

means for sending one or more messages to said display computer indicating a width and height of said sub-image.

52. The apparatus of claim 48, wherein said means for sending one or more messages to said display computer includes:

means for sending one or more messages to said display computer indicating the transmission of said sub-image of a composite image has been completed.

53. The apparatus of claim 48, wherein said means for sending one or more messages includes:

means for sending one or more messages to said display computer indicating the position on the screen to which the sub-image of the composite image is to be displayed.

54. The apparatus of claim 47, further comprising:

means for determining the amount of memory available in the off-screen memory.

55. The apparatus of claim 54, wherein said means for determining includes means for receiving an indicator of the amount of memory available in the off-screen memory during or after initialization of the connection between the display computer and host computer.

56. The apparatus of claim 55, wherein said means for determining further includes means for receiving any stride requirements from the display computer during or after initialization of the connection between the display computer and host computer.

57. The apparatus of claim 47, wherein said means for breaking includes:

means for breaking said composite image into one or more sub-images, wherein said sub-images are chosen so as to maximize the number of sub-images that are equal in size to said available memory in the off-screen memory.

58. The apparatus of claim 47, wherein said means for breaking includes:

means for breaking said composite image into one or more sub-images, wherein said sub-images are chosen so as to maximize the number of sub-images that are equal in size to some fixed width and height.

59. The apparatus of claim 47, wherein said breaking and transmitting are performed when a copy area command from a composite image in a pixmap to a realized window is recorded.

60. An apparatus for handling a composite image sent from a host computer to a display computer, the display computer having an on-screen display and an off-screen memory with available memory, the apparatus comprising:

means for receiving one or more sub-images of the composite image from the host computer;

means for storing said one or more sub-images in an off-screen memory; and

means for transferring each of said sub-images in said off-screen memory to the on-screen display.

61. The apparatus of claim 60, wherein each of said sub-images is a rectangle.

62. The apparatus of claim 60, wherein said means for receiving includes, for each of said sub-images:

means for receiving one or more messages from the host computer indicating a sub-image of a composite image is being transmitted, wherein said one or more messages comprise data sufficient to reconstitute said sub-image on-screen.

63. The apparatus of claim 62, wherein said means for receiving one or more messages includes:

means for receiving one or more messages from the host computer indicating a sub-image of a composite image is about to be transmitted.

64. The apparatus of claim 62, wherein said means for receiving one or more messages includes:

means for receiving one or more messages from a host computer indicating a width and height of said sub-image.

65. The apparatus of claim 62, wherein said means for receiving one or more messages includes:

means for receiving one or more messages from the host computer indicating the transmission of said sub-image has been completed.

66. The apparatus of claim 62, wherein said means for receiving one or more messages includes:

means for receiving one or more messages from said host computer indicating the position on the screen to which the sub-image of the composite image is to be displayed.

67. The apparatus of claim 60, further comprising sending an indicator of the amount of memory available in the off-screen memory to the host computer during or after initialization of the connection between the display computer and the host computer.

68. The apparatus of claim 67, wherein said sending an indicator further comprises sending an indicator of any stride requirements to the host computer during or after initialization of the connection between the display computer and the host computer.

69. An apparatus for handling a composite image sent from a host computer to a display computer, the display computer having a buffer and an on-screen display, the apparatus comprising:

means for receiving one or more protocol commands used to draw the composite image;

means for storing said one or more protocol commands in the buffer; and

means for drawing the composite image on the on-screen display by executing said one or more protocol commands in the buffer.

70. The apparatus of claim 69, further comprising:

means for receiving one or more messages from the host computer indicating that the composite image is about to be transmitted.

71. The apparatus of claim 69, further comprising:

means for receiving one or more messages from the host computer indicating that the transmission of the composite image has been completed.

72. A program storage device readable by a machine, tangibly embodying a program of instructions executable by the machine to perform a method for sending a composite image from

a host computer to a display computer, the display computer having an off-screen memory with available memory, the method comprising:

breaking said composite image into one or more sub-images, wherein each of said sub-images can fit into the available memory of the off-screen memory; and

transmitting each of said sub-images to said display computer for storage in the off-screen memory.

73. A program storage device readable by a machine, tangibly embodying a program of instructions executable by the machine to perform a method for handling a composite image sent from a host computer to a display computer, the display computer having an on-screen display and an off-screen memory with available memory, the method comprising:

receiving one or more sub-images of the composite image from the host computer;

storing said one or more sub-images in an off-screen memory; and

transferring each of said sub-images in said off-screen memory to the on-screen display.

74. A program storage device readable by a machine, tangibly embodying a program of instructions executable by the machine to perform a method for handling a composite image sent from a host computer to a display computer, the display computer having a buffer and an on-screen display, the method comprising:

receiving one or more protocol commands used to draw the composite image;

storing said one or more protocol commands in the buffer; and

drawing the composite image on the on-screen display by executing said one or more protocol commands in the buffer.